



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,728	08/17/2006	Kadir Kavaklioglu	30203/41615	9524
45372 7590 02/25/2009 MARSHALL, GERSTEIN & BORUN LLP (FISHER) 233 SOUTH WACKER DRIVE 6300 SEARS TOWER CHICAGO, IL 60606				
EXAMINER				
LE, JOHN H				
ART UNIT		PAPER NUMBER		
2863				
MAIL DATE		DELIVERY MODE		
02/25/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/589,728

Applicant(s)

KAVAKLIOGLU, KADIR

Examiner

JOHN H. LE

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2009.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) 57-69 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 9, 39-41, 50-53 and 56 is/are rejected.
- 7) ☒ Claim(s) 4-8, 10-38, 42-49, 54 and 55 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 08/25/08, 12/13/08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (Claims 1-56) in Paper mailed on 01/07/2009 is acknowledged. Accordingly, claims 57-69 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.
2. Applicant has the right to file a divisional application covering the subject matter of the non-elected claims 57-69.

Specification

3. The abstract of the disclosure is objected to because the form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided.. Correction is required. See MPEP § 608.01(b).

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an

Art Unit: 2863

invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 11/079,808 (US 2005/0267715). Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of prior art anticipate claim 1 of instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

6. Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/944,609 (US 2005/0267709). Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of prior art anticipate claim 1 of instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Potyralio (USP 6,549,864).

Regarding claim 1, a method of detecting an abnormal situation associated with a process plant (e.g. Col.2, lines 1-5), comprising: receiving measured data pertaining to a process parameter sensed by at least one sensor device associated with the process plant (e.g. Col.2, lines 6-9); determining one or more statistical measures associated with the process parameter using the measured data (e.g. Col.2, lines 9-11); and using the one or more statistical measures associated with the process parameter to detect an abnormal situation within the process plant (e.g. Fig.1, step 40, Col.8, lines 30-35).

9. Claims 1-3, 39, 41, 50-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Daw et al. (USP 6,901,351).

Regarding claim 1, Daw et al. disclose a method of detecting an abnormal situation associated with a process plant (e.g. Fig.1), comprising: computer 9 receiving measured data pertaining to a process parameter sensed by at least one sensor device 4 (which may be an optical scanner, a pressure transducer, an acoustical transducer) associated with the process plant (heater in process plant); the computer 6 analyzes the sensor data, the analysis involving standard statistics (e.g. range, variance, standard deviation, skewness, rms, kurtosis...etc.); the computer 6 determines one or more statistical measures associated with the process parameter using the measured data and using the one or more statistical measures associated with the process parameter to detect an abnormal situation within the process plant (see Fig.4, Col. 9, lines 46-67).

Regarding claims 39 and 51, Daw et al. disclose method of detecting an abnormal situation in a fluid catalytic cracker (e.g. Col.9, lines 37-52), comprising: receiving measurements of a process parameter in the fluid catalytic cracker (agitator 30)(e.g. Col.10, line10-12) ; the computer 6 analyzes the sensor data, the analysis involving standard statistics (e.g. range, variance, standard deviation, skewness, rms, kurtosis...etc.) and determining a statistical measure of the process parameter from the process parameter measurements (see Col. 9, lines 46-67);comparing the statistical measure of the process parameter to a baseline value; and the computer 6 detecting the existence of an abnormal situation based on the comparison of the statistical measure of the process parameter to the baseline value (e.g. Fig.3, Col.10, lines 22-45).

Regarding claim 2, Daw et al. disclose the processing the measured data to produce processed data and wherein determining the one or more statistical measures associated with the process parameter includes determining the one or more statistical measures using the processed data (e.g. Col. 9, lines 46-67).

Regarding claim 3, Daw et al. disclose determining a block length (time interval) for use in computing the one or more statistical measures from the measured data (e.g. Col.13, lines 34-67, Col.14, lines 60-65).

Regarding claim 40, Daw et al. disclose determining the baseline value as a predetermined value (e.g. Col.19, lines 1-11).

Regarding claim 41, Daw et al. disclose determining the baseline value as a statistical measure of a first set of the measurements of the process parameter (e.g. Col.19, lines 1-11).

Regarding claim 50, Daw et al. disclose determining the statistical measure of the process parameter from the process parameter measurements, comparing the statistical measure of the process parameter to the baseline value (e.g. Fig.3) and detecting the existence of the abnormal situation (Fig.3, step 55) are performed within a field device (valves 22, 24 in reactor unit 16) that detects the measurements of the process parameter (e.g. Fig.3, Col.6, line 65-Col.7, line 12, Col.10, lines 22-45).

10. Claims 1-3, 39, 42, and 51 are rejected under 35 U.S.C. 102(e) as being anticipated by Ford et al. (USP 7,181,654)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Ford et al. disclose a method of detecting an abnormal situation associated with a process plant (e.g. Col.9, lines 37-52), comprising: receiving measured data pertaining to a process parameter sensed by at least one sensor device (50) associated with the process plant (e.g. Col.7, lines 14-23, Col.10, line10-12); determining one or more statistical measures associated with the process parameter using the measured data (e.g. Col.7, lines 41-46, Col.10, line10-12); and using the one or more statistical measures associated with the

Art Unit: 2863

process parameter to detect an abnormal situation within the process plant (e.g. Col.13, lines 30-53).

Regarding claims 39 and 51, Ford et al. disclose method of detecting an abnormal situation in a fluid catalytic cracker (e.g. Col.9, lines 37-52), comprising: receiving measurements of a process parameter in the fluid catalytic cracker (agitator 30)(e.g. Col.10, line10-12) ;determining a statistical measure of the process parameter from the process parameter measurements (e.g. Col.10, lines 56-66);comparing the statistical measure of the process parameter to a baseline value (e.g. Col.12, lines 35-52); and detecting the existence of an abnormal situation based on the comparison of the statistical measure of the process parameter to the baseline value (e.g. Col.13, lines 30-53)..

Regarding claim 2, Ford et al. disclose the processing the measured data to produce processed data and wherein determining the one or more statistical measures associated with the process parameter includes determining the one or more statistical measures using the processed data (e.g. Col.7, lines 35-65).

Regarding claim 3, Ford et al. disclose determining a block length (time length) for use in computing the one or more statistical measures from the measured data (e.g. Col.13, lines 8-19, Col.16, lines 21-33).

Regarding claim 42, Ford et al. disclose the process parameter is a differential pressure between two locations in the fluid catalytic cracker and wherein the statistical measure of the process parameter is a mean of the differential pressure between two locations in the fluid catalytic cracker (e.g. Col.6, lines 49-55).

11. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Heavner et al. (US 20005/0267709 A1)

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Heavner et al. disclose a method of detecting an abnormal situation associated with a process plant (heater in process plant), comprising: receiving measured data pertaining to a process parameter sensed by at least one sensor device (pressure sensors, temperature sensors) associated with the process plant; determining one or more statistical measures associated with the process parameter using the measured data; and using the one or more statistical measures associated with the process parameter to detect an abnormal situation within the process plant (e.g. paragraph [0017]).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

Art Unit: 2863

said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Daw et al. (USP 6,901,351) in view of Adamiak et al. (USP 6,456,947).

Regarding claim 3, Daw et al. disclose fail to disclose determining the one or more statistical measures includes fitting the measured data to a sine wave.

Adamiak et al. teach determining the one or more statistical measures (e.g. Col.2, lines 44-52) includes fitting the measured data to a sine wave (e.g. Col.11, lines 45-47).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to inform determining the one or more statistical measures includes fitting the measured data to a sine wave as taught by Adamiak et al. in a method of detecting an abnormal situation associated with a process plant of Daw et al. for the purpose of providing a faster transient response (Adamiak et al., Col.12, lines 36-38).

14. Claims 52-53 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daw et al. (USP 6,901,351) in view of Emigholz et al. et al. (USP 7,424,395).

Regarding claims 52-53, Daw et al. fail to disclose the process parameter is a differential pressure between two locations in distillation column.

Emigholz et al. et al. teach the process parameter is a differential pressure between two locations in distillation column (see claim 78).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to inform the process parameter is a differential pressure

Art Unit: 2863

between two locations in distillation column as taught by Emigholz et al. in a method of detecting an abnormal situation associated with a process plant of Daw et al. for the purpose of providing a method for detecting an abnormal event for some process units of an ethylene processing system (Emigholz et al., Col.2, lines 15-17).

Regarding claim 56, Daw et al. disclose determining the statistical measure of the process parameter from the process parameter measurements, comparing the statistical measure of the process parameter to the baseline value (e.g. Fig.3) and detecting the existence of the abnormal situation (Fig.3, step 55) are performed within a field device (valves 22, 24 in reactor unit 16) that detects the measurements of the process parameter (e.g. Fig.3, Col.6, line 65-Col.7, line 12, Col.10, lines 22-45).

Allowable Subject Matter

15. Claims 4-8, 10-38, 42-49, 54-55 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 4, none of the prior art of record teaches or suggests determining the block length (time interval) includes collecting a number of first data points for the process parameter, determining a frequency component of the process parameter based on the collected number of first data points, determining a dominant system time constant from the frequency component and

Art Unit: 2863

setting the block length based on the dominant system time constant. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 10, none of the prior art of record teaches or suggests wherein fitting the measured data to a sine wave includes determining first and second parameters of the sine wave based on statistical measures of the process parameter determined from the measured data. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 17, none of the prior art of record teaches or suggests wherein determining the one or more statistical measures associated with the process parameter includes determining a baseline value of a first statistical measure of the process parameter and determining a further statistical measure of the process parameter from the measured data, and wherein using the one or more statistical measures associated with the process parameter to detect an abnormal situation within the process plant includes comparing the baseline value of the first statistical measure of the process parameter to the further statistical measure of the process parameter to determine the existence of an abnormal situation. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 43, none of the prior art of record teaches or suggests wherein the process parameter is a differential pressure across a catalyst valve in the fluid catalytic cracker, wherein the statistical measure of the process parameter is a mean of the differential pressure across the catalyst valve in the fluid catalytic cracker and wherein detecting the existence of an abnormal situation based on the comparison of the statistical measure of the process parameter to the baseline value includes detecting an air blower problem when the mean value of the differential pressure across the catalyst valve is less than the baseline value. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 44, none of the prior art of record teaches or suggests wherein the process parameter is a differential pressure across a catalyst valve in the fluid catalytic cracker, wherein the statistical measure of the process parameter is a standard deviation of the differential pressure across the catalyst valve in the fluid catalytic cracker and wherein detecting the existence of an abnormal situation based on the comparison of the statistical measure of the process parameter to the baseline value includes detecting a catalyst flow problem when the standard deviation of the differential pressure across the catalyst valve is greater than the baseline value. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 45, none of the prior art of record teaches or suggests wherein the process parameter is a level parameter within the fluid catalytic cracker, wherein the statistical measure of the process parameter is a mean of the level parameter and wherein detecting the existence of an abnormal situation based on the comparison of the statistical measure of the process parameter to the baseline value includes detecting pipe plugging when the mean of the level parameter becomes greater than the baseline value. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 46, none of the prior art of record teaches or suggests wherein the process parameter includes a first level parameter and a first pressure parameter in a reactor of the fluid catalytic cracker and includes a second level parameter and a second pressure parameter in a regenerator of the fluid catalytic cracker, wherein the statistical measure of the process parameter is a cross correlation between the first and second level parameters and the first and second pressure parameters, and wherein detecting the existence of an abnormal situation based on the comparison of the statistical measure of the process parameter to the baseline value includes detecting pipe plugging between the reactor and the regenerator when the cross correlation changes by a value greater than the baseline value. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found,

Art Unit: 2863

taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 47, none of the prior art of record teaches or suggests wherein the process parameter is a temperature parameter within the fluid catalytic cracker, wherein the statistical measure of the process parameter is a mean of the temperature parameter and wherein detecting the existence of an abnormal situation based on the comparison of the statistical measure of the process parameter to the baseline value includes detecting insufficient steam flow when the mean of the temperature in the fluid catalytic cracker becomes greater than the baseline value. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 48, none of the prior art of record teaches or suggests wherein the process parameter is a temperature parameter within the fluid catalytic cracker, wherein the statistical measure of the process parameter is a mean of the temperature parameter and wherein detecting the existence of an abnormal situation based on the comparison of the statistical measure of the process parameter to the baseline value includes detecting thermal extremes when the statistical measure of the temperature in the fluid catalytic cracker becomes greater than a first baseline value or less than a second baseline value. It is these limitations as they are claimed in the combination with other limitations

Art Unit: 2863

of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 49, none of the prior art of record teaches or suggests wherein the process parameter is a differential temperature within the fluid catalytic cracker, wherein the statistical measure of the process parameter is a mean of the differential temperature and wherein detecting the existence of an abnormal situation based on the comparison of the statistical measure of the process parameter to the baseline value includes detecting thermal cracking when mean of the differential temperature exceeds the baseline value. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 54, none of the prior art of record teaches or suggests wherein the baseline value is a low differential pressure value, the statistical measure of the process parameter is a mean of the differential pressure and wherein detecting the existence of an abnormal situation includes detecting tray dumping or tray damage when the mean of the differential pressure is less than the low differential pressure value. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Regarding claim 55, none of the prior art of record teaches or suggests wherein the baseline value is a high differential pressure value, the statistical

Art Unit: 2863

measure of the process parameter is a mean of the differential pressure and wherein detecting the existence of an abnormal situation includes detecting tray plugging when the mean of the differential pressure is greater than the high differential pressure value. It is these limitations as they are claimed in the combination with other limitations of claim, which have not been found, taught or suggested in the prior art of record, that make these claims allowable over the prior art.

Contact Information

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN H. LE whose telephone number is (571) 272-2275. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2863

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John H Le/
Primary Examiner, Art Unit 2863
February 26, 2009